

The Influence of Parental Rearing Styles on Non-suicidal Self-harm Behaviors in Patients with Depression: The Mediating Effect of Alexithymia

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Abstract: *Objective:* To explore the influence of parental parenting styles on non-suicidal self-injury (NSSI) behaviors in adolescent patients with depression, and to test the mediating role of alexithymia in this process. *Method:* A total of 180 adolescent patients with depression who were hospitalized or receiving outpatient treatment in a tertiary hospital in Wuhan were selected. The Parenting Behavior Inventory (PBI), the Toronto Alexithymia Scale (TAS-20), and the Adolescent Non-Suicidal Self-Injury Behavior Questionnaire (ANSAQ) were used for assessment. Correlation analysis was conducted using SPSS 26.0, and the mediating effect was tested using the PROCESS macro program. *Results:* The detection rate of NSSI in adolescent patients with depression was 57.8% (104/180). Negative parenting styles were significantly positively correlated with NSSI ($r = 0.384, p < 0.01$), and the total score of alexithymia was significantly positively correlated with NSSI ($r = 0.495, p < 0.01$), while positive parenting styles were significantly negatively correlated with alexithymia ($r = -0.356, p < 0.01$). The mediation effect test showed that alexithymia played a partial mediating role between parental parenting styles and NSSI, with an indirect effect value of 0.186 and a 95% confidence interval of [0.092, 0.291]. *Conclusion:* Negative parenting styles of parents can directly or through the mediating role of alexithymia increase the risk of NSSI behavior in adolescent patients with depression. Early identification and intervention of alexithymia may help reduce the NSSI behavior of adolescent patients with depression.

Keywords: Parental parenting style; Alexithymia; Non-suicidal self-injury; Adolescent depression; Mediating effect

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1. Introduction

Non-suicidal self-injury (NSSI) refers to the situation where an individual intentionally and repeatedly harms their own body tissues without having the intention to commit suicide^[1]. In recent years, the incidence of NSSI among teenagers has been on the rise. Domestic data show that the proportion of teenagers with NSSI and depression is 44.8% to 62.11%. NSSI is not only a way to express severe psychological pain but also a high-risk factor for future suicidal behavior. Therefore, studying the mechanism of NSSI behavior in teenagers with depression is of great significance.

The family is the main place where human emotions are socialized. The parenting style influences the way children regulate their emotions. Existing studies have shown that negative parenting styles, such as severe punishment, denial or rejection, and excessive protection, significantly increase the risk of NSSI in teenagers, while emotional warmth has a protective effect. However, the internal psychological mechanism of NSSI behavior caused by parenting styles has not been fully explained. Emotional alexithymia is a characteristic of people who cannot recognize or express their emotions. Studies have shown that teenagers with depression accompanied by NSSI have a higher level of alexithymia than those without NSSI. Due to the blocked emotional expression channels, alexithymic individuals will turn their attention to physical behaviors to express their pain^[2]. The family emotional environment plays an important shaping role in the occurrence of alexithymia^[3]. This study constructs a mediating model of “parenting style → alexithymia → NSSI”, aiming to test the mediating role of alexithymia in it.

2. Objectives and methods

2.1. Research subjects

The research subjects were selected from teenagers with depression who were hospitalized or visited the outpatient department of the psychiatry department of a tertiary hospital in Wuhan from April 2025 to October 2025. The inclusion criteria were meeting the ICD-10 10th edition diagnostic criteria for depression, diagnosed by a psychiatrist with a title of chief physician or above, aged 12-18 years old, with a total score of HAMD-17 > 17, clear consciousness, able to understand and independently complete the questionnaire filling, and the subjects and their guardians gave informed consent and signed the informed consent form. The exclusion criteria were severe mental disorders (schizophrenia, bipolar disorder, etc.), autism spectrum disorder, intellectual developmental disorder, combined with serious physical diseases or neurological diseases, history of substance use or drug dependence, and the subjects or their guardians did not agree to participate in this study.

A total of 200 questionnaires were distributed, and 180 valid questionnaires were retrieved, with an effective recovery rate of 90.0%. The research plan has been approved by the hospital's ethics committee.

2.2. Research tools

(1) Parental parenting style questionnaire (PBI)

Adopted the revised Chinese version by Chu Yanmin et al., with 25 items, divided into two aspects of care and excessive protection, rated on a 4-point scale. The Chinese version's Cronbach's α coefficient was 0.74 to 0.85.

(2) Toronto alexithymia scale (TAS-20)

Adopted the revised Chinese version by Ai Jin Yao et al., with 20 items, divided into three dimensions of emotional recognition difficulty, emotional description difficulty, and extroverted thinking, rated on a 5-point scale. The Chinese version's Cronbach's α coefficient was 0.83 to 0.87.

(3) Adolescent non-suicidal self-injury behavior questionnaire (ANSAQ)

The questionnaire compiled by Wan Yuhui et al. was adopted to assess the types and frequency of NSSI behavior in the past 12 months. The Cronbach's α coefficient of this questionnaire was 0.87.

2.3. Statistical methods

SPSS 26.0 software was used for data management and statistical analysis. First, Harman's single-factor test was used to test for common method bias; secondly, descriptive statistical analysis was used to describe the basic characteristics of the sample and the detection rate of NSSI; then, independent sample t-tests were conducted to compare the differences in scores on each scale between the NSSI group and the non-NSSI group; next, Pearson correlation analysis was used to examine the correlations among the various variables; finally, the Hayes-developed Process macro program (Model 4) was used to conduct the mediation effect test, with 5000 Bootstrap repeated sampling to obtain a 95% confidence interval. A *p*

value < 0.05 was considered statistically significant.

3. Results

3.1. Basic characteristics of the sample

The reliability of each scale used in this study was good: the Cronbach's α coefficient of PBI was 0.82, that of TAS-20 was 0.87, and that of ANSAQ was 0.85. The Harman single-factor test showed that the variance explained by the first factor was 24.36%, which was less than the critical value of 40%, indicating no severe common method bias.

Among the 180 adolescent patients with depression, 65 were male (36.1%), and 115 were female (63.9%); the average age was (15.42 ± 1.78) years; 78 were junior high school students (43.3%), and 102 were senior high school students (56.7%). The detection rate of NSSI was 57.8% (104/180). In the NSSI group, 73 were female (70.2%), and 31 were male (29.8%), and the proportion of females was significantly higher than that of males ($\chi^2 = 6.73, p < 0.01$). The specific forms of NSSI behavior are shown in **Table 1**.

Table 1. Types and frequency of NSSI behaviors in adolescent patients with depression (n = 104)

Types of NSSI behavior	Number of cases (n)	Incidence rate (%)
Cutting/scratching skin	78	75.0
Scratching skin until bleeding	52	50.0
Slapping/impacting the body	46	44.2
Piercing with a sharp object	38	36.5
Burning/scalding	21	20.2
Pulling hair	18	17.3
Others	15	14.4

To further compare the differences in each core variable between the NSSI group and the non-NSSI group, the results of the independent sample *t*-test are presented in **Table 2**. The findings show that the NSSI group scored significantly higher than the non-NSSI group in the dimension of excessive protection of parental upbringing, and scored significantly lower in the dimension of care ($p < 0.01$); the total score of emotional dysregulations and the scores of each dimension in the NSSI group were significantly higher than those in the non-NSSI group ($p < 0.01$).

Table 2. Comparison of scale scores between the NSSI group and the non-NSSI group ($\bar{x} \pm s$)

Variable	NSSI group (n = 104)	Non-NSSI group (n = 76)	<i>t</i> value	<i>p</i> value
PBI - Care	22.36 $\pm$ 5.84	26.51 $\pm$ 6.12	-3.94	< 0.01
PBI - Overprotection	15.28 $\pm$ 4.17	12.03 $\pm$ 3.85	4.82	< 0.01
TAS-20 total score	64.75 $\pm$ 8.62	54.18 $\pm$ 9.36	6.72	< 0.01
Difficulty in emotion recognition	25.43 $\pm$ 4.28	20.15 $\pm$ 4.76	6.05	< 0.01
Difficulty in emotion description	17.82 $\pm$ 3.51	14.06 $\pm$ 3.82	5.89	< 0.01
Extraverted thinking	21.50 $\pm$ 3.96	19.97 $\pm$ 3.54	7.43	< 0.01

3.2. Correlation analysis

The results of Pearson correlation analysis are presented in **Table 3**. The PBI - Care dimension was significantly negatively correlated with the total score of alexithymia ($r = -0.356, p < 0.01$) and the frequency of NSSI behavior ($r = -0.312, p < 0.01$); the PBI - Overprotection dimension was significantly positively correlated with the total score of alexithymia ($r = 0.418, p < 0.01$) and the frequency of NSSI behavior ($r = 0.384, p < 0.01$); the total score of alexithymia was significantly

positively correlated with the frequency of NSSI behavior ($r = 0.495, p < 0.01$).

Table 3. Correlation matrix of variables (r values)

Variable	1	2	3	4
1. PBI - care	1			
2. PBI - overprotection	-0.485**	1		
3. TAS-20 total score	-0.356**	0.418**	1	
4. NSSI behavior frequency	-0.312**	0.384**	0.495**	1

Note: ** $p < 0.01$

3.3. Regression analysis

A regression analysis was conducted with PBI-Overprotection as the independent variable, the total score of TAS-20 as the mediating variable, and the frequency of NSSI behavior as the dependent variable, as shown in **Table 4**. Parental overprotection significantly positively predicted alexithymia ($\beta = 0.418, p < 0.001$), and also significantly positively predicted NSSI behavior ($\beta = 0.384, p < 0.001$); when alexithymia entered the regression equation, its predictive effect on NSSI behavior was significant ($\beta = 0.445, p < 0.001$), and the direct effect of parental overprotection on NSSI behavior decreased from 0.384 to 0.232 ($p < 0.01$).

Table 4. Regression analysis among variables

Outcome variable	Predictor variable	β	SE	t value	p value
TAS-20 total score	PBI - Overprotection	0.418	0.068	6.15	< 0.001
NSSI behavior frequency	PBI - Overprotection	0.232	0.072	3.22	< 0.01
NSSI behavior frequency	TAS-20 total score	0.445	0.062	7.18	< 0.001

3.4. Mediation effect test

The mediation effect was tested using the Bootstrap method, and the results are shown in **Table 5**. The indirect effect value of alexithymia between excessive parental protection and NSSI behavior was 0.186, with a 95% confidence interval of [0.092, 0.291], which does not include 0. The mediation effect was significant. The direct effect value was 0.232, with a 95% confidence interval of [0.072, 0.392]. The proportion of the mediation effect to the total effect was 44.5%.

Table 5. Bootstrap mediation effect test results

Effect type	Effect value	Boot SE	95% confidence interval	Proportion of effect (%)
Direct effect	0.232	0.081	[0.072, 0.392]	55.5
Indirect effect	0.186	0.050	[0.092, 0.291]	44.5
Total effect	0.418	0.073	[0.274, 0.562]	100

4. Discussion

According to the results of this survey, the positive rate of NSSI among adolescent patients with depression is 57.8%, with more females than males, which is consistent with the results of the meta-analysis by Bresin et al., indicating that female adolescents use self-harm to regulate their emotions more often than male adolescents^[4]. Liu Xinglan et al. believe that the proportion of females among depressed patients with NSSI is higher than that of males, which is consistent with the results of this study.

Disregulation of emotional expression belongs to the mediating variable between parental parenting styles and NSSI behavior in this study. Adolescents who have been in an overly protective and highly controlling parenting environment for a long time have their space for emotional expression compressed and fewer opportunities for emotional validation, gradually developing difficulties with emotional recognition and description. When negative emotions occur, due to the lack of skills to verbalize emotions, they cannot use mature means such as verbal expression to regulate, and NSSI behavior becomes a “substitute way of emotional regulation”. Family conflicts and negative parenting environments are risk factors for adolescent NSSI behavior, which is consistent with the research conclusions of Albaum et al. on the relationship between family conflicts and suicide and depression in adolescents^[5]. The way parents’ guide negative emotions (sadness) socially will also have an impact on the clinical outcome of adolescent NSSI behavior, as proved by Green’s longitudinal study^[6]. Social determinants cannot be ignored. Goñi Sarriés et al. believe that social factors are associated with NSSI^[7]. From a clinical assessment and treatment perspective, Apicella et al. provide systematic guidance for clinicians to understand the phenomenon of adolescent NSSI and evidence-based treatment^[8]. For the intensified exposure response prevention intervention for anxious adolescents with a history of self-harm, Stark et al. also demonstrated its potential in improving NSSI-related behaviors^[9].

Li Tingting et al. believe that family function has a significant impact on the NSSI behavior of adolescent patients with depression, and self-efficacy and psychological resilience will act as mediating variables. This indicates that family environmental factors can affect NSSI behavior through internal psychological traits. Fu Xiaomei et al. believe that the absence of pleasure will act as a mediating variable to mediate the relationship between self-compassion and emotional dysregulation, and this has been confirmed in stroke patients. A comparative study on the absence of pleasure in patients with unipolar and bipolar depression also pointed out that emotional processing deficits are a main feature of depressive disorders and are consistent with the view of this study that emotional dysregulation is a mediating variable^[10].

Therefore, the negative parenting style of parents is a high-risk factor for NSSI behavior in adolescent patients with depression, and emotional dysregulation plays a partial mediating role. This finding indicates that there is a psychological transmission pathway from the family environment to self-harm behavior, so early identification and intervention of emotional dysregulation can reduce the occurrence of NSSI behavior in adolescent patients with depression.

Disclosure statement

The author declares no conflict of interest.

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